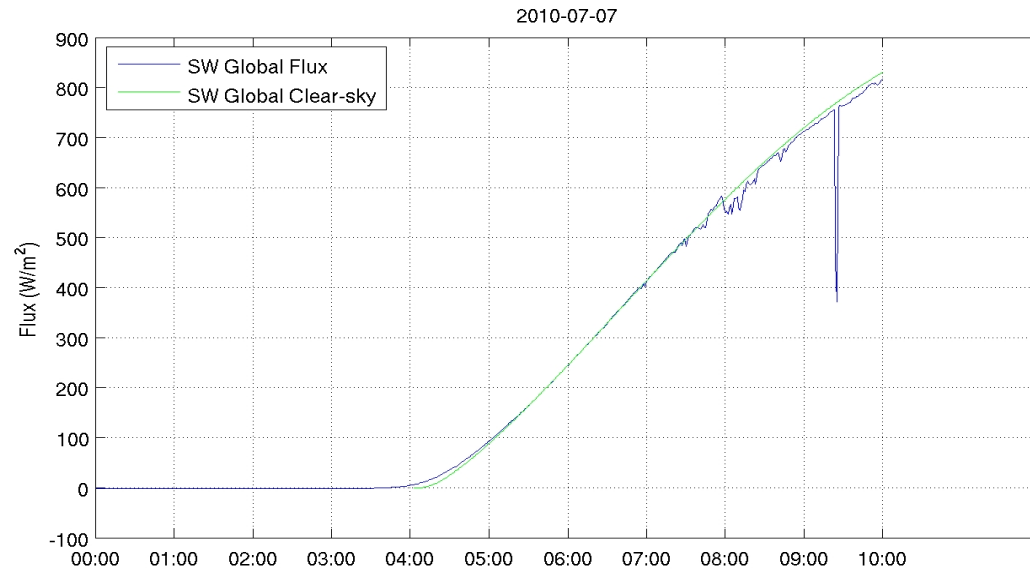


# Radiative budget and green-house effect

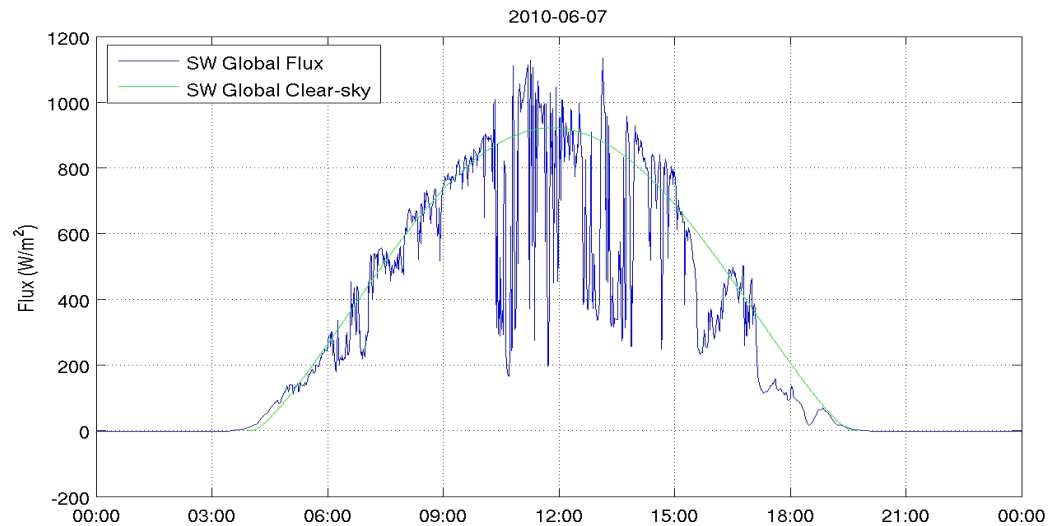
*– Students restitution –*

*07 July 2010*



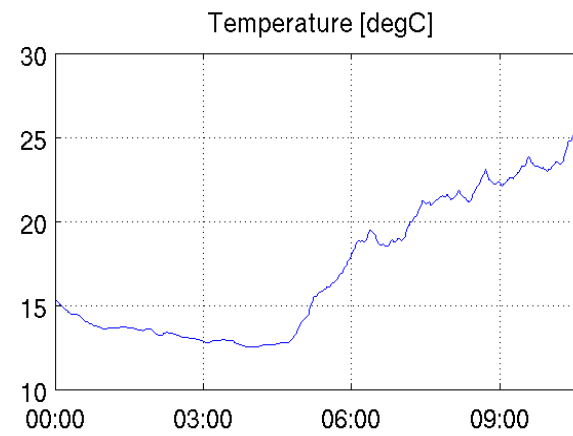
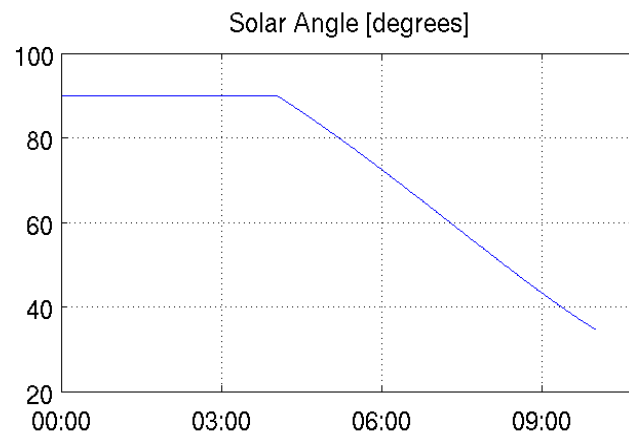
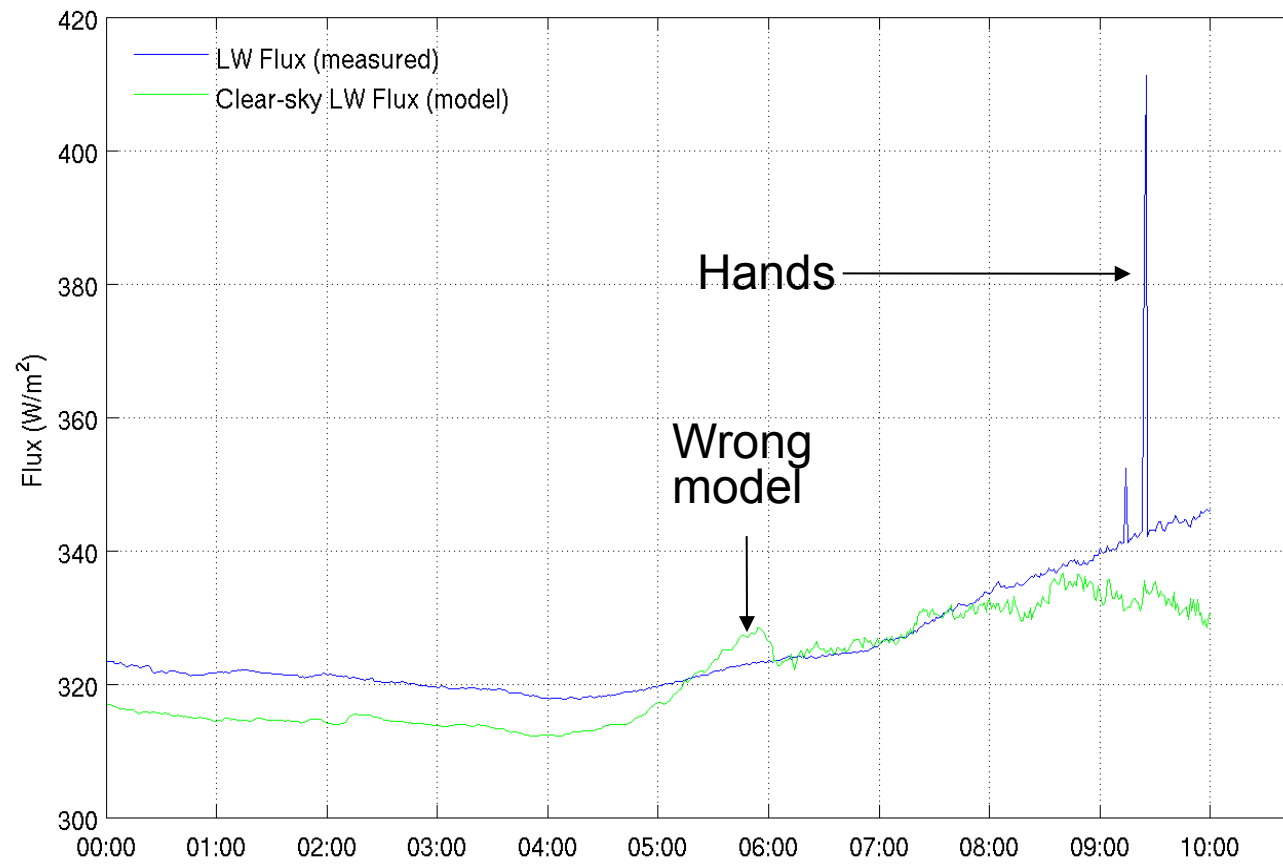
## Today (7/7/10):

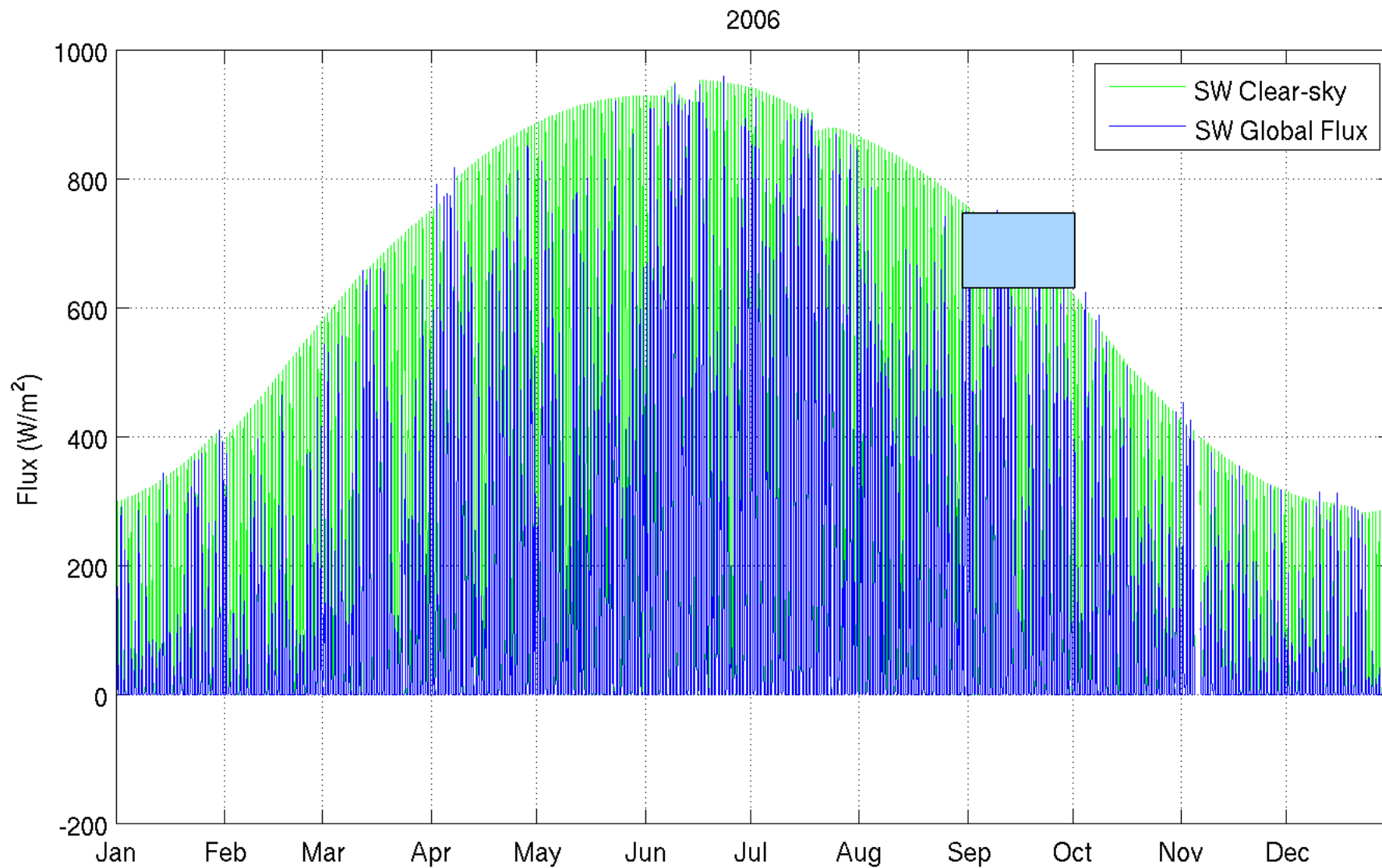
- ◆ Short wave radiation matches clear-sky model.
- ◆ Around 9:30 (UTC) sharp fluctuation in received short-wave radiation due to the presence of hands

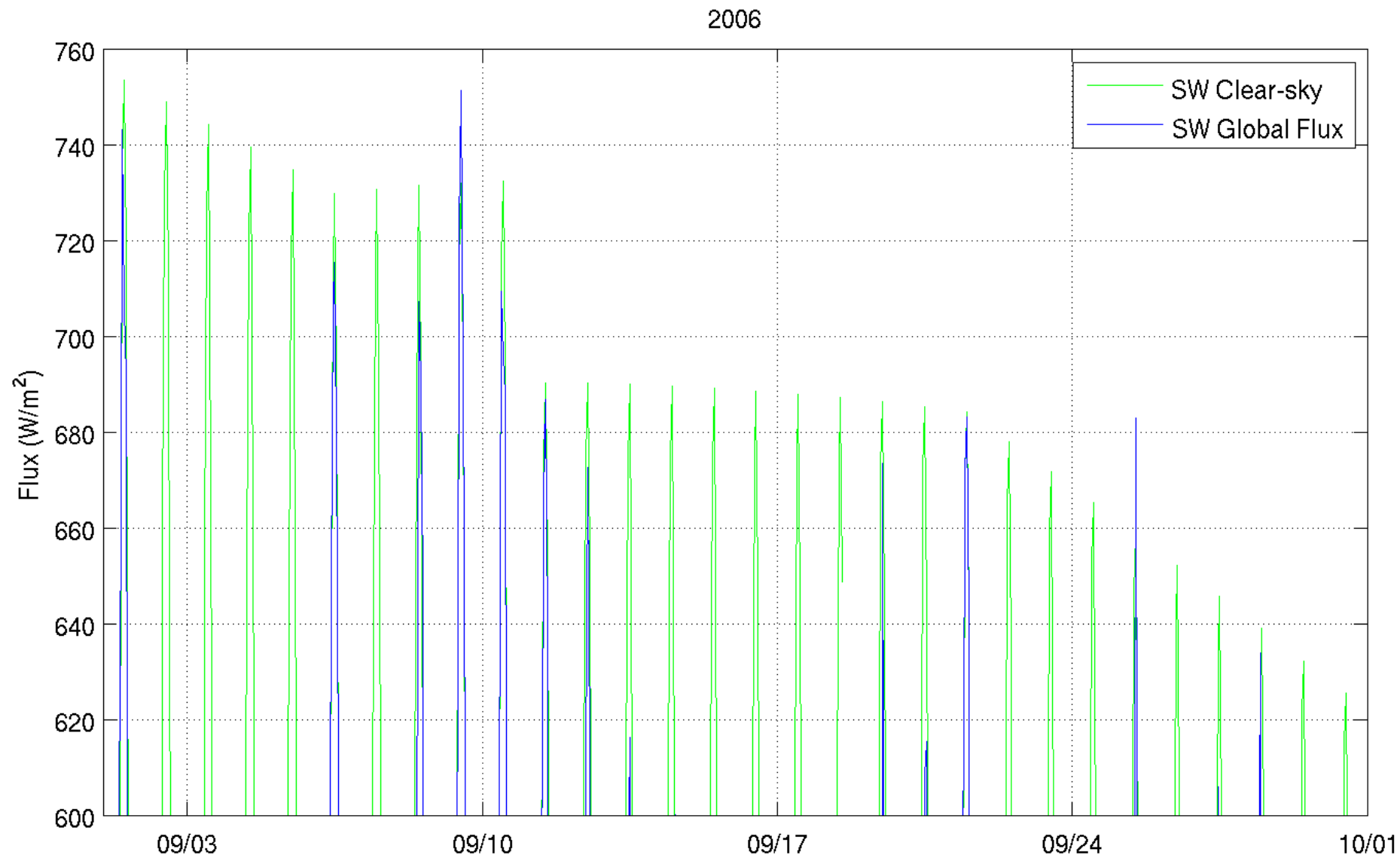


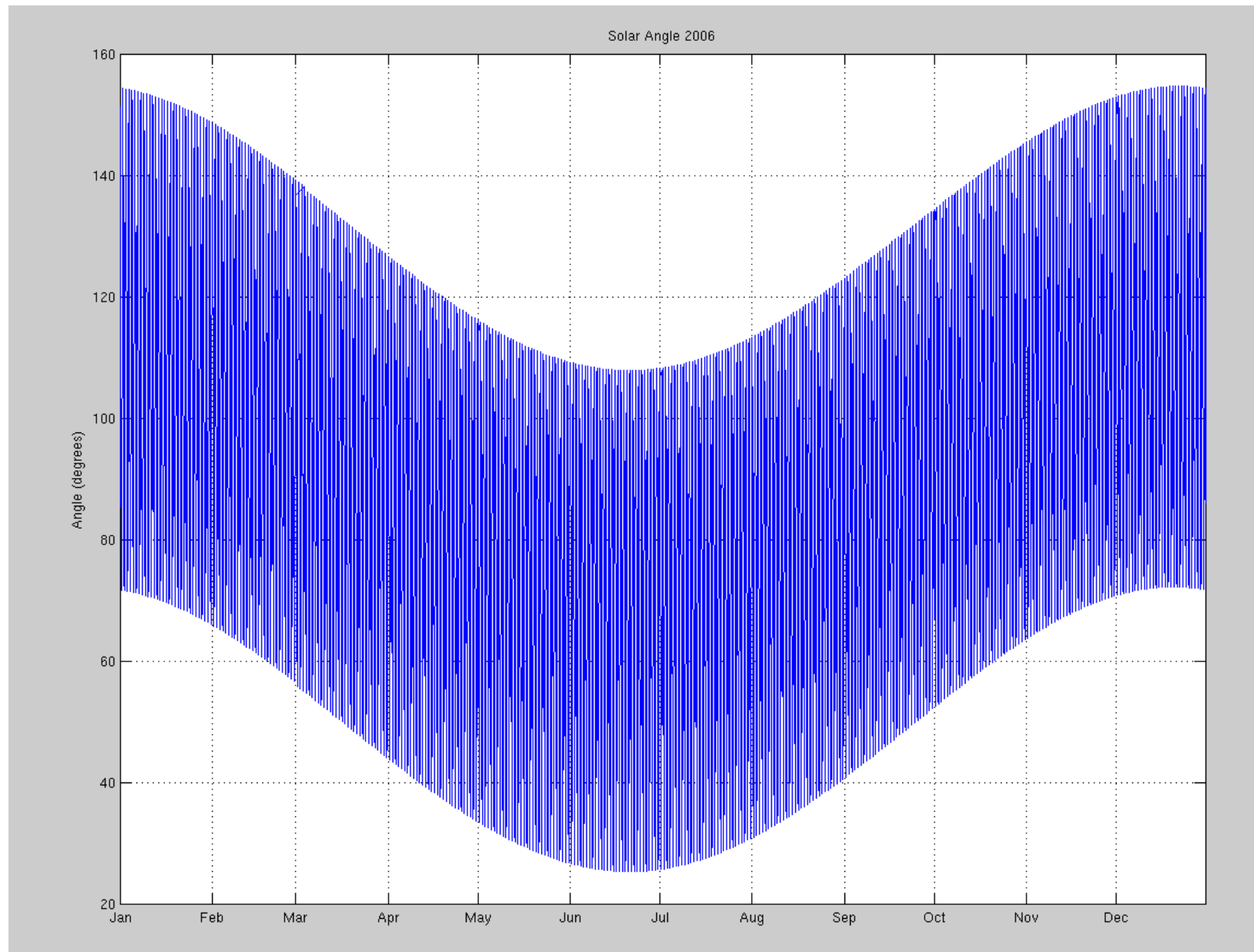
## 7<sup>th</sup> June 2010:

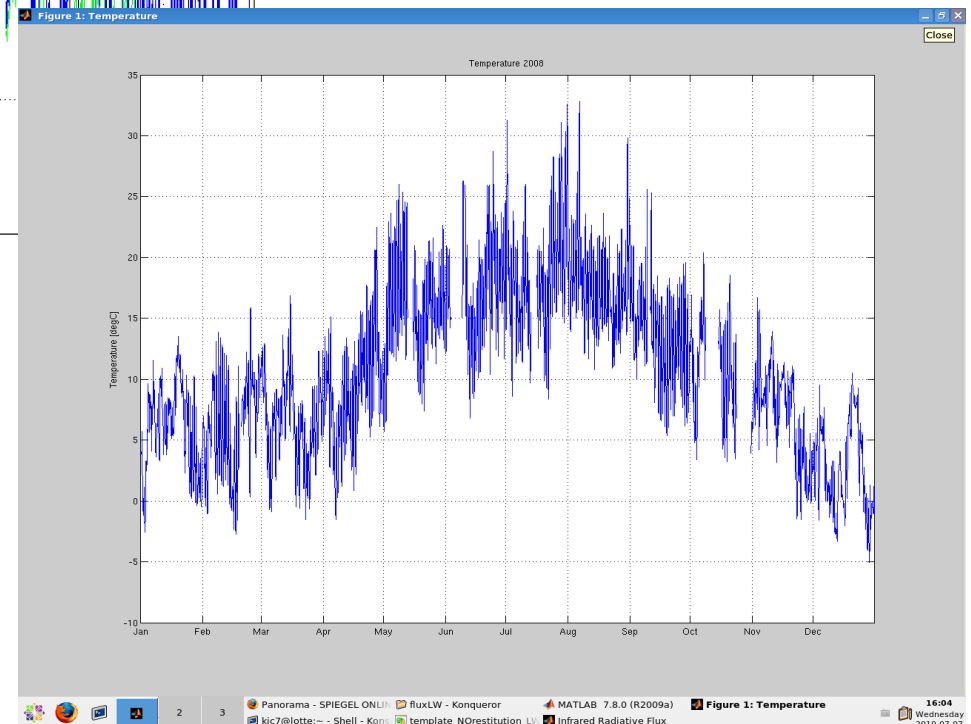
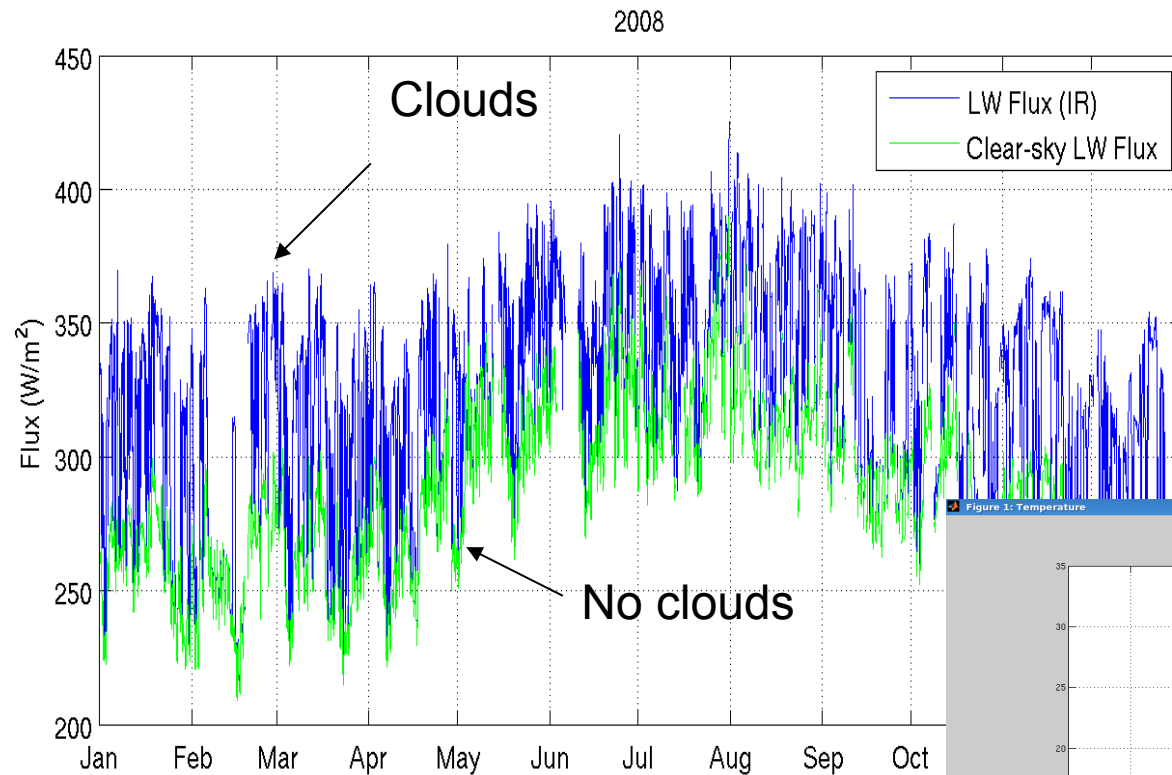
- ◆ Full day cycle of short-wave radiation
- ◆ Semi-cloudy day
- ◆ Large fluctuations in SW radiation
- ◆ Fluctuations greater than clear-skies due to technical error (saturation of device)





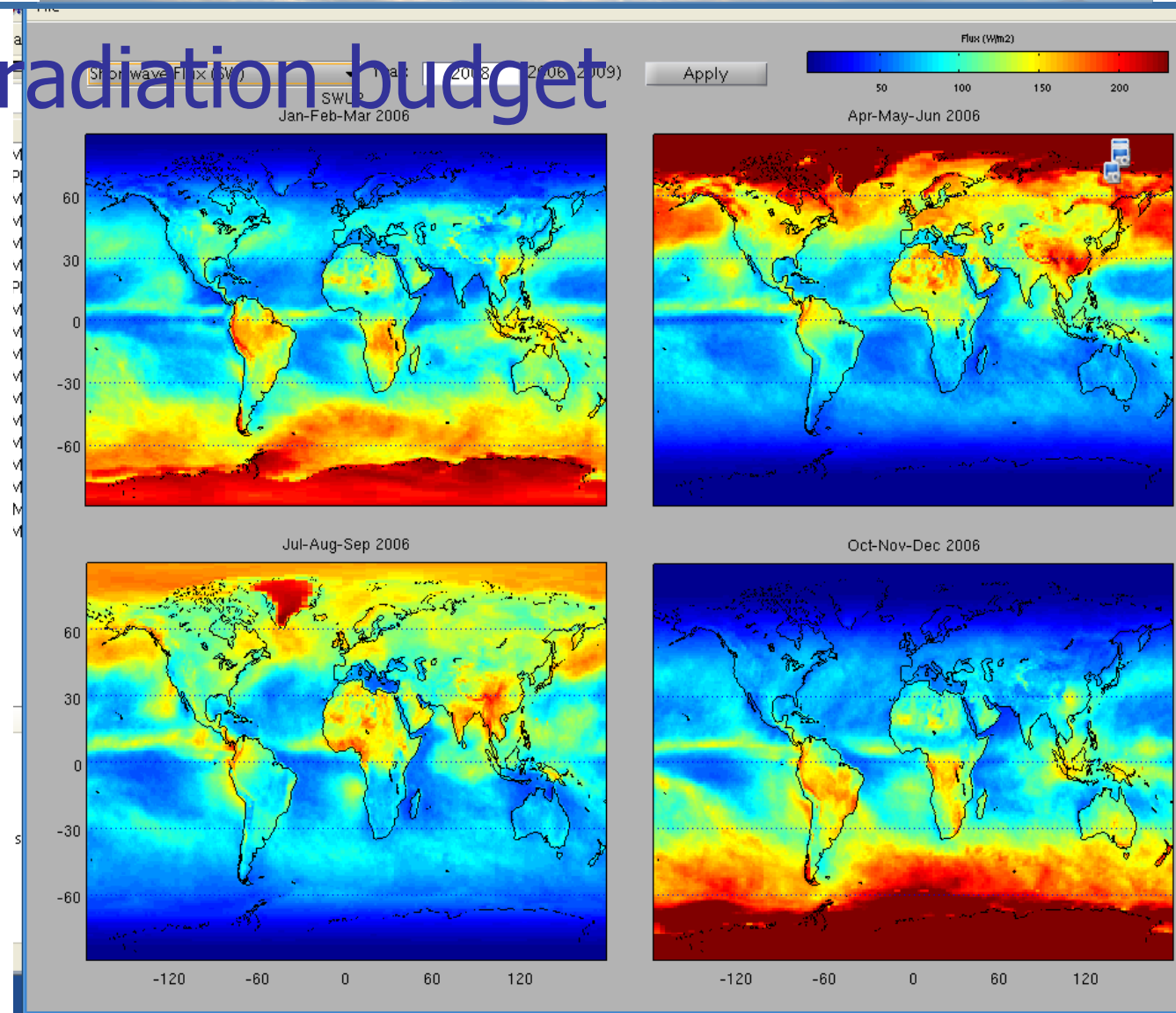






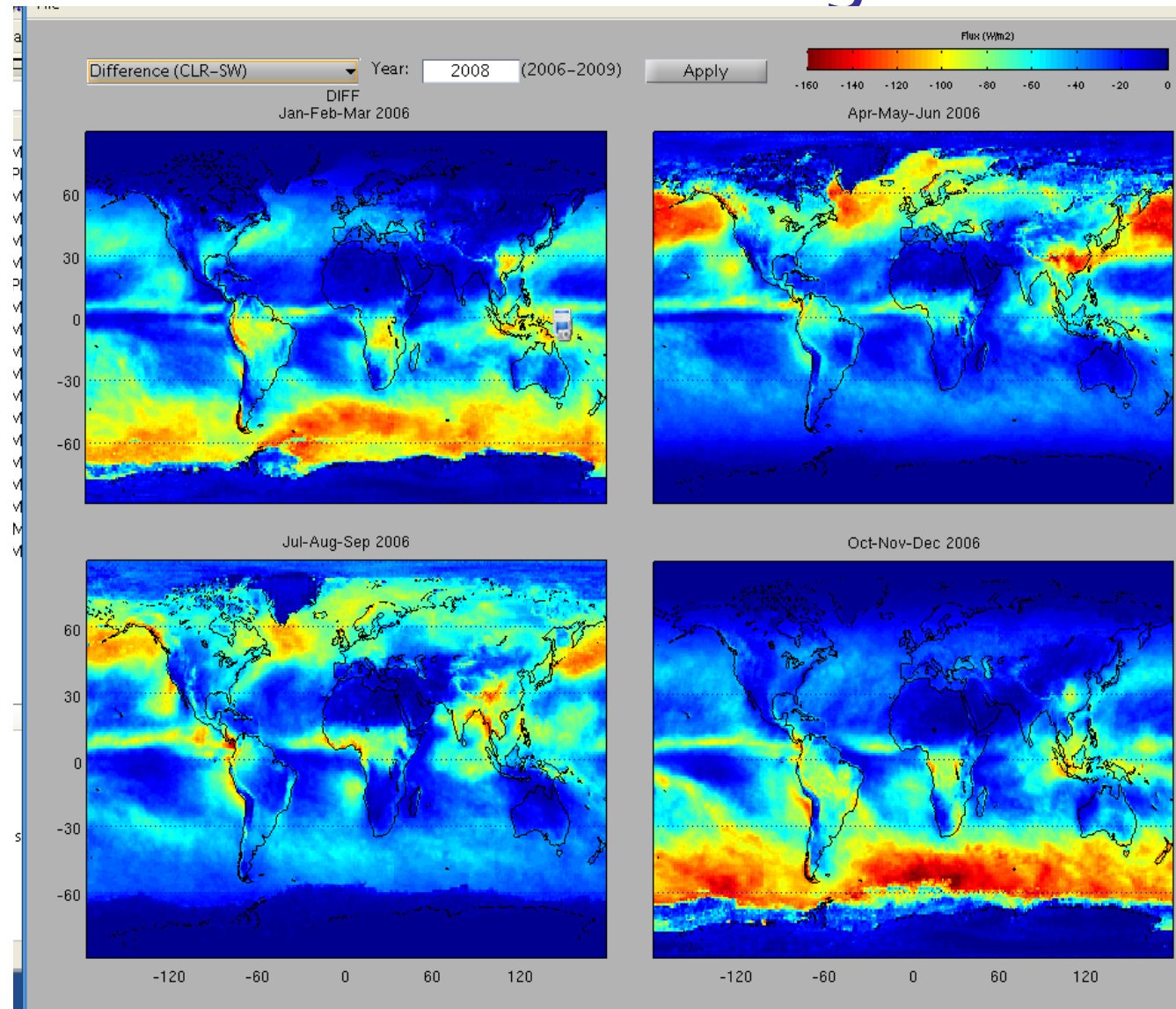


## SW radiation budget

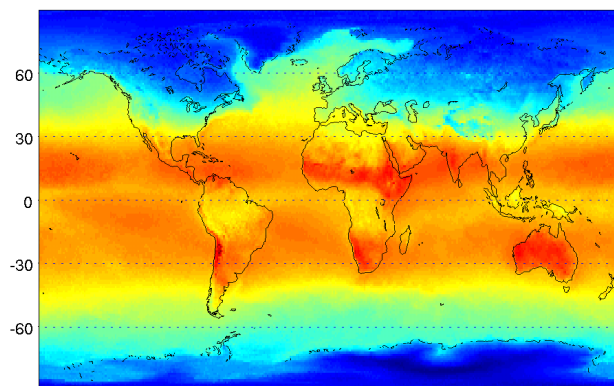




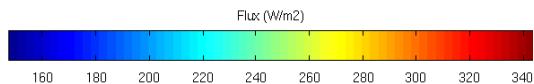
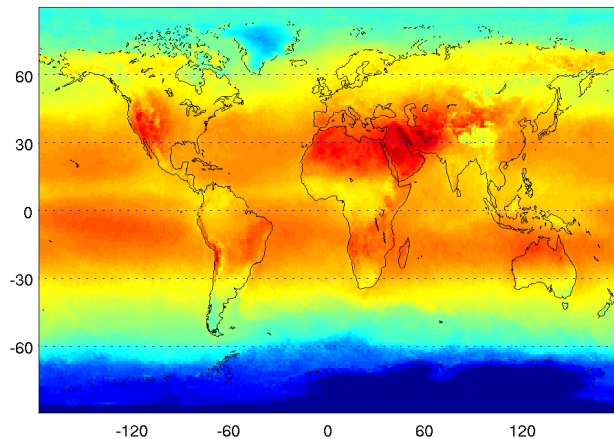
# SW Cloud Radiative Forcing



LWUPCLR  
Jan-Feb-Mar 2008



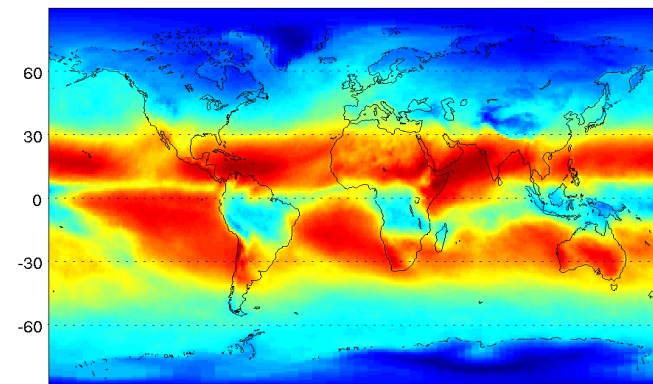
Jul-Aug-Sep 2008



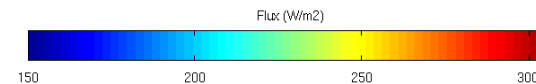
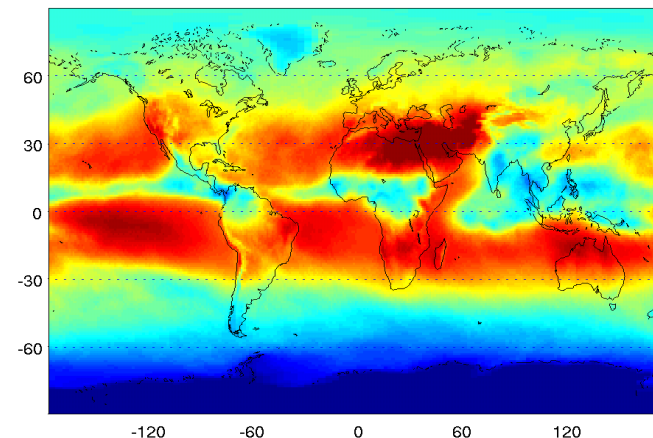
<- Flux strongly depends on topography (e.g., rainforests, mountains) and water vapour

Seasonal difference

LWUP  
Jan-Feb-Mar 2008



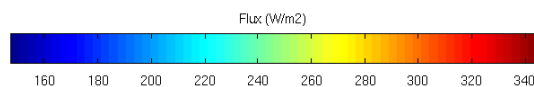
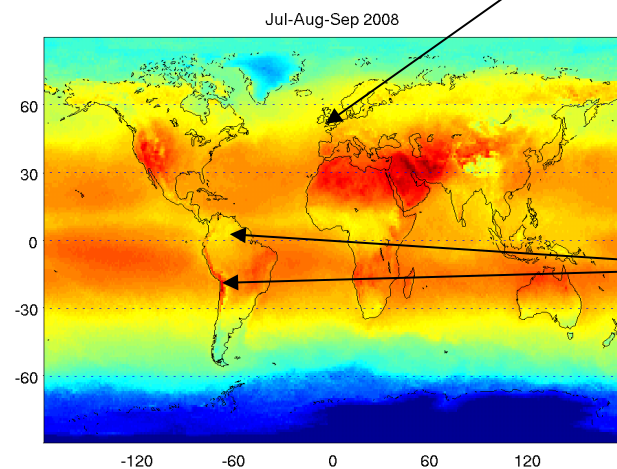
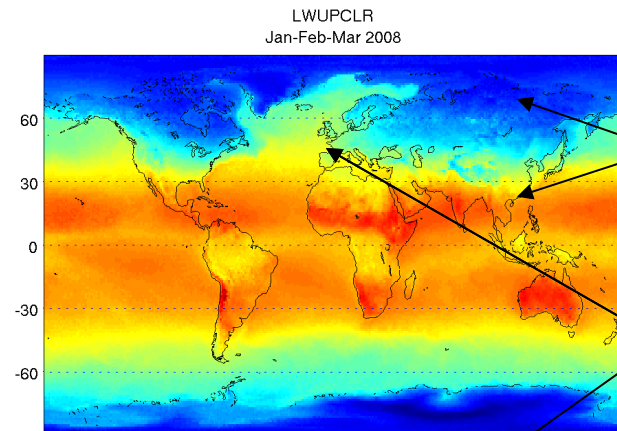
Jul-Aug-Sep 2008



## LW Clear Sky

## Satellite-based Measurements

## LW With Cloud



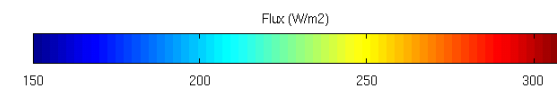
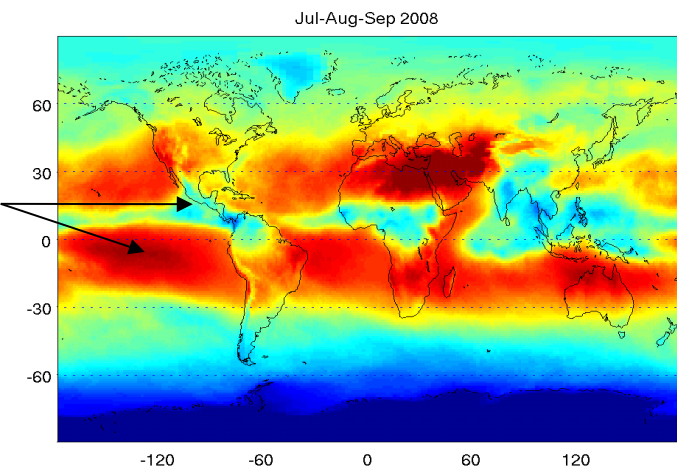
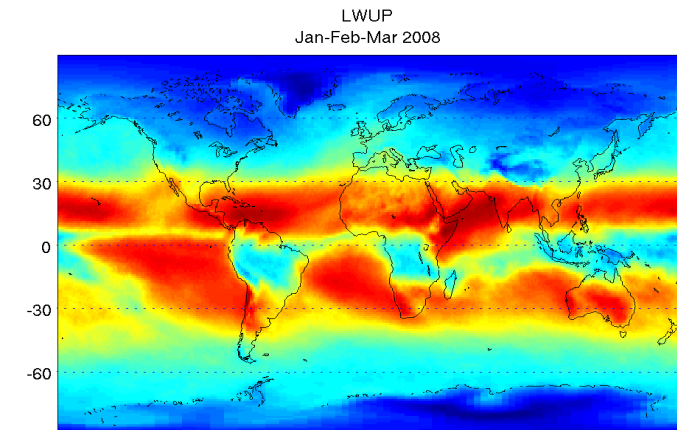
JFM

Latitude

Season

JAS

Surface



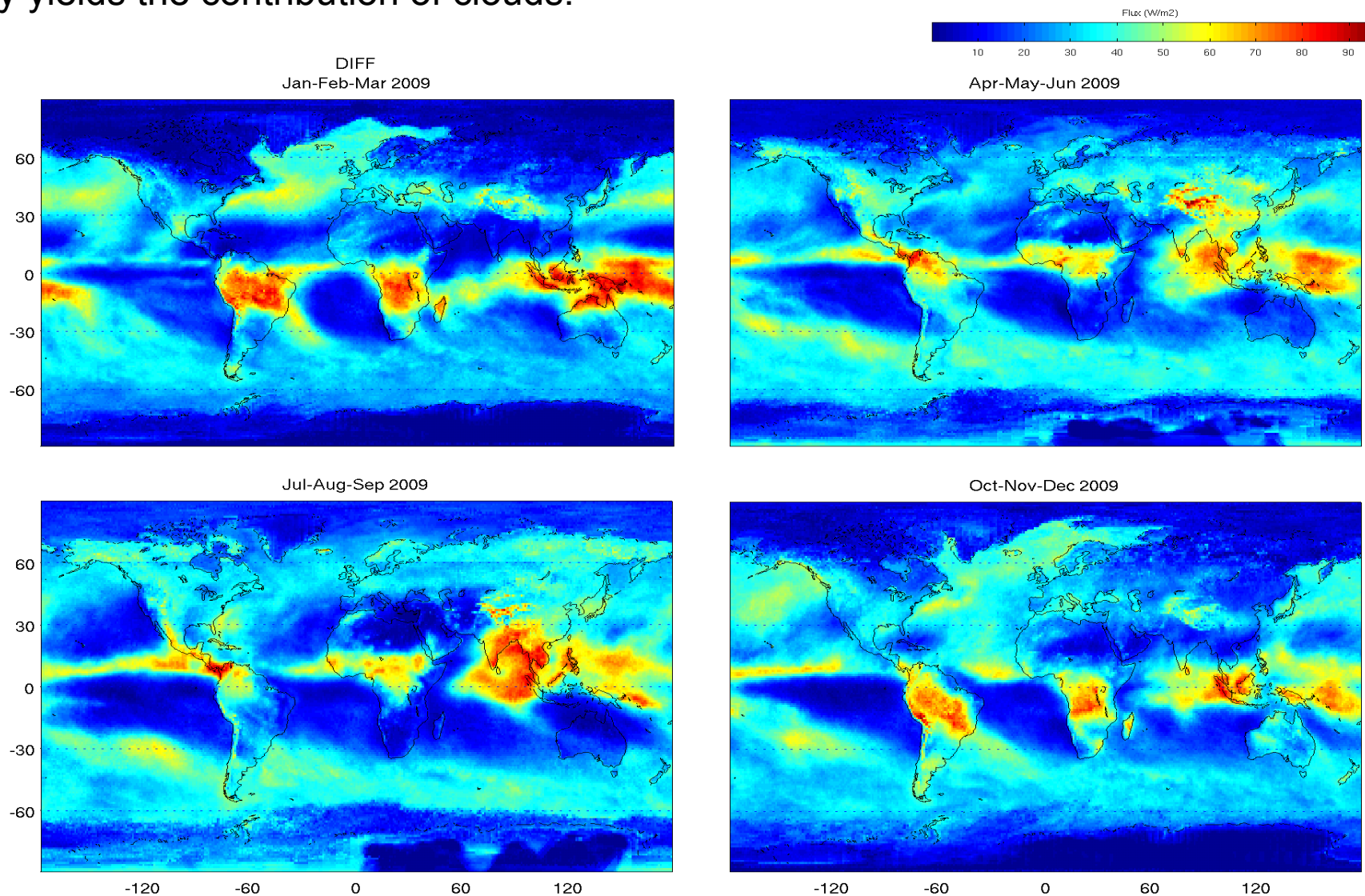
Clouds

Variability of long-wave radiation dependent on: Latitude, Season, Clouds, Surface



## 8. Global maps of cloud radiative forcing for long-wave

Substraction of the total flux from the flux of clear sky yields the contribution of clouds.



9. **Brainstorm:** are radiative fluxes the only important variables for climate prediction?